AMENDMENT

IN THE SPECIFICATION:

[006] In order to establish a connection between optical ports of two peer nodes interconnected with a glass fiber optical cable, a toning signal is generated and transmitted on Twisted Pair B (TPB+/-) of the ~~IEEEE~~ IEEE 1394b PHY. Toning is the IEEE 1394b method for beta-mode connection determination. Toning makes use of a "tone" signal and a "tone" detector. An ~~IEEEE~~ IEEE 1394b device is also listening to its peer port from a Twisted Pair A (TPA+/-) of its own, acting as a "tone" detector. The node is ready to detect the incoming signal as a tone if the peer device has an ~~IEEEE~~ IEEE 1394b PHY or as a TPBias if the peer device has an ~~IEEEE~~ IEEE 1394a PHY. When the peer node receives a tone signal, it recognizes that the other node is an ~~IEEEE~~ IEEE 1394b device and a beta mode connection may be established.

[010] The IEEE 1394b PHY receiver can only accept a "1", "0" or "z" (high impedance). The "z" means an open circuit or the input is floated. It is strictly constrained that between each tone nothing may be transmitted from the peer optical transmitter. The receiver must see a "z" from its input circuit. Noise transmitted from the peer optical transmitter may confuse the IEEE 1394b PHY receiver and disturb the initialization process. Noise may prevent the establishment of a connection between the two ~~IEEEE~~ IEEE 1394b nodes.

[014] The control circuit of the present invention includes a voltage divider, a high speed voltage comparator, and a positive feedback network. When an ~~IEEEE~~ IEEE 1394b PHY is sending a tone, the PHY transmitter (TPB+/-) outputs a 50 MHz signal that is 667 µsec wide with a typical common mode voltage ramping from 0V to 1.5V. This common mode voltage signal may be fed into the negative input of the comparator and is compared with a reference voltage of about 50% of the PHY output common mode voltage

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generated by the voltage divider at the positive input of the comparator. When the voltage at the positive input is greater than the voltage at the negative input a logic high may be output, otherwise a logic low is output. When a tone is present the TPB's common mode voltage signal will ramp up from 0V and cross over the reference level then finally settle at 1.5V during the 667µsec tone period. When the voltage signal crosses the reference level, the comparator's output instantly transitions to the logic low from the logic high. During the quiet period between two consecutive tones, the common mode voltage remains at a 0V level. The output of the comparator may be connected to the TxEn_Bar input of the optical transceiver so as to ~~disabled~~ disable the transmitter when the comparator output it is at the logic high and enable the transmitter when it is at the logic low. In this manner, when a tone is present the optical transmitter is enabled and during the quiet period between two consecutive tones the optical transmitter is disabled.

[031] In operation, the voltage divider 440 may provide the reference voltage to the positive input 510 through resistor R5 545. The mid point of the ~~IEEEE~~ IEEE 1394b PHY's TPB (+/-) termination network 470 carrying the differential pair's common mode voltage signal is connected to the negative input 505 through the resistor R6 560. The comparator's output 520 may be connected to the optical transceiver's TxEn_Bar input 430.

[032] In the process of connection detection, when the ~~IEEEE~~ IEEE 1394b PHY's TPB (+/-) 410 sends out a tone, the pair's common mode voltage typically ramps up from 0V to 1.5V. The reference voltage at positive input 510 is preferably approximately at the mid point of the range. When the input voltage at the negative input 505 crosses above the reference voltage the comparator's output 520 may toggle from logic high to logic low, hence enabling the optical transmitter 420. During the quiet period between two consecutive tones, the negative input 505 may be at 0V and the comparator's output 520 may remain at logic high and the optical transmitter 420 is disabled.

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